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CARDIOVASCULAR FLASHLIGHT

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Acute rupture of a thin cap fibroatheroma: value of multimodality imaging

Roland Klingenberg^{1*}, Robert Manka^{1,2}, Tim Finkenzstädt², Thomas F. Lüscher¹, Jasmina Alibegovic¹, and Hatem Alkadhi²¹Department of Cardiology, University Heart Center, University Hospital Zurich, Rämistrasse 100, CH-8091 Zurich, Switzerland and ²Institute of Diagnostic and Interventional Radiology, University Hospital Zurich, CH-8091 Zurich, Switzerland* Corresponding author. Tel: +41 44 255 2115; Fax: +41 44 255 8701; Email: roland.klingenberg@usz.chThis manuscript was handled by Guest Editor Brahmajee Kartik Nallamothu (University of Michigan, bnallamo@umich.edu)

A 37-year-old male patient with no prior medical history presented to our hospital for evaluation of atypical chest pain. His ECG demonstrated minor T inversions in the inferior leads, his blood tests were normal (including D-dimers) except slightly elevated (serial) troponin T. Transthoracic echocardiogram (TTE) was normal whereas cardiac magnetic resonance (cMR) imaging showed mainly epicardial late gadolinium enhancement in the inferolateral region (Panel A) without pericardial effusion, compatible with perimyocarditis. Two weeks later the patient presented with recurrent chest pain. Coronary computed tomography angiography (CCTA) demonstrated an isolated soft plaque with high-risk morphology (the so-called napkin sign) with a 50% stenosis in the mid-RCA and outward remodeling (Panel B). Catheter coronary angiography was performed showing a 20–50% stenosis in the mid-RCA with luminal haziness (Panel C) attributable to intraluminal thrombus formation, confirmed by optical coherence tomography (OCT) (Panel D, Supplementary material online, Movie). Thrombus aspiration was unsuccessful and hence a drug-eluting stent was placed in the mid-RCA and the patient was subsequently treated for NSTEMI.

In conclusion, this case illustrates the value of multi-modality imaging for comprehensive evaluation of patients with atypical chest pain. While initial cMR imaging was suggestive of perimyocarditis, the later course suggested acute rupture of a plaque in the RCA causing myocardial ischaemia/infarction in the inferolateral left ventricular wall. This is substantiated by the illustration of a soft plaque with ring-like hyperattenuation and central hypodensity in the CTCA cross section being a surrogate of thin cap fibroatheroma, which is considered an unstable plaque type, and the demonstration of fresh thrombotic material by OCT.

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